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Preface

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c unterfl w The flow of two fluids in apposed vessels in opposite directions. In biological systems such an arrangement enables the efficient transfer of heat, ions, molecules, etc., from fluids that are rich in these resources to fluids that are deficient in them.

c urtship Behaviour in animals that plays a part in the initial attraction of a mate or as a prelude to copulation. Courtship often takes the form of displays that have evolved through *ritualization; some are derived from other contexts (e.g. food begging in some birds). Chemical stimuli (see **pheromone**) are also important in many mammals and insects.

As well as ensuring that the prospective mate is of the same species, the male's courtship performance allows females to choose between different males. The later stages of courtship may involve both partners in an alternating series of displays that inhibit *aggression and fear responses and ensure synchrony of sexual arousal.

COV See crossover value.

covalent bond A type of *chemical bond in which atoms are held together in a molecule by sharing one or more pairs of electrons in their outer shells. For example, in the water molecule (H_2O) each hydrogen atom forms a covalent bond by sharing its only electron with one of the six electrons in the outer shell of the oxygen atom. *Coordinate* (or *dative*) bonds are covalent bonds in which one of the atoms supplies both the electrons. *Single bonds* are those in which one pair of electrons is shared; in *double* or *triple bonds* two or three pairs, respectively, are shared.

Cowper's glands (bulbourethral glands) A pair of pea-sized glands that lie beneath the prostate gland, named after the English surgeon William Cowper (1660-1709). Cowper's glands secrete an alkaline fluid that forms part of the *semen. This fluid neutralizes the acidic environment of the urethra, thereby protecting the sperm. See also **seminal vesicle**.

coxa The first (basal) segment, attached to the thorax, of the leg of an insect, arachnid, or of certain other arthropods. See also **femur**; **trochanter**.

coxal glands Paired ducts (coelomoducts) in arthropods that lead from the *coelom to the exterior and are normally involved in excretion. In arachnids one or two pairs of coxal glands in the cephalothorax open at the bases (coxae) of one or two pairs of legs.

C₃ pathway The metabolic pathway followed in the dark stage of *photosynthesis by most plants of temperate regions, in which the first product is the three-carbon compound glycerate 3-phosphate. This is formed when carbon dioxide combines with *ribulose biphosphate in the first reaction of the *Calvin cycle. Plants that follow this pathway are referred to as *C₃ plants*. Compare **C₄ pathway**.

C₄ pathway (Hatch-Slack pathway) The metabolic pathway followed in the dark stage of *photosynthesis by tropical plants, such as sugar cane and maize, and by plants that live in arid environments; these plants are known

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